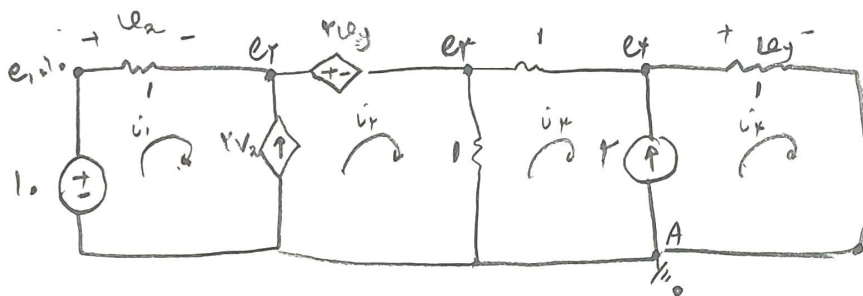


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$$\frac{\mu}{r} r(t+q) = \omega_1 \omega r(t+\gamma) + r(t+\omega) + u(t+\omega) + \frac{\gamma}{\mu} r(t+\mu) \\ - \frac{\gamma}{\mu} r(t) - r \sin\left(\frac{\pi}{10}\right) (u(t) - u(t-10)) - 4u(t-12)$$

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$$\frac{e_1 - 10}{1} + \frac{e_2 - 0}{1} + \frac{e_3 - e_4}{1} = r(10 - e_2)$$

$$e_2 - e_3 = r(10 - e_2)$$

$$\frac{e_4 - e_3}{1} + \frac{e_5 - 0}{1} = r$$

معدت توان منفی است
پس توان تولید
است

$$\Rightarrow \begin{cases} r e_2 + r e_3 - e_4 = r \\ e_2 - e_3 - r e_4 = 0 \\ -e_2 + r e_4 = r \end{cases}$$

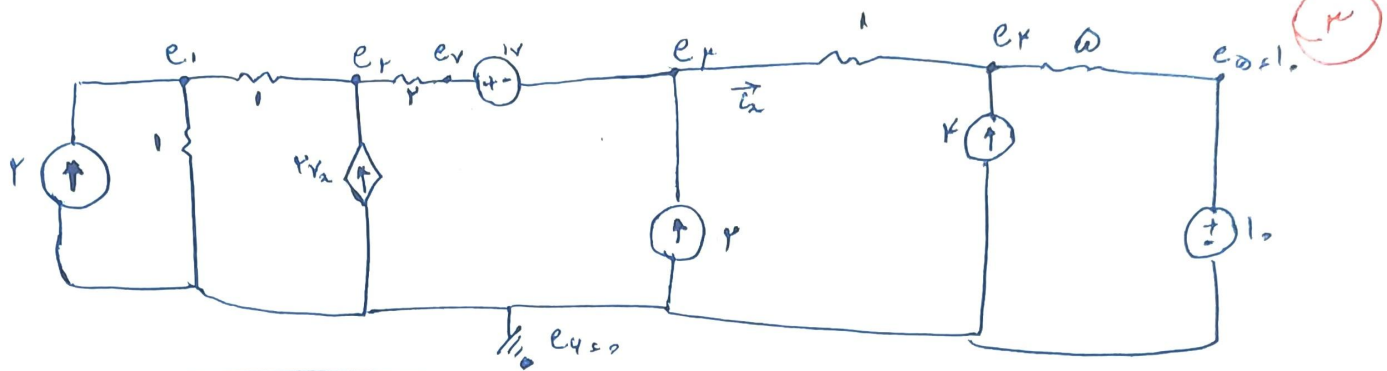
$$\Rightarrow e_1 = 10 \quad e_2 = \frac{r}{1+r}$$

$$e_3 = \frac{1}{1+r} \quad e_4 = \frac{r}{1+r}$$

$$P = -I U = -r U_{ex} (e_2 - 0) = -r \times (10 - e_2) (e_2 - 0) =$$

$$-r \times \frac{r}{1+r} \times \frac{r}{1+r} = -\frac{r^3}{(1+r)^2}$$

چون در اینجا بالا و در مدار منبع جریانی
در این است = (تولید)



$$\frac{e_1 - e_r}{1} + \frac{e_1 - 0}{1} = r$$

$$\frac{e_r - e_1}{1} + \frac{e_r - e_r}{r} = r \left(\frac{e_r - e_r}{1} \right)$$

$$\frac{e_r - e_1}{r} + \frac{e_r - e_r}{1} = r$$

$$e_r - e_1 = 1$$

$$e_r - e_r + \frac{e_{\omega=1} - e_r}{\omega} = k$$

$$r e_1 - e_r = r \Rightarrow \boxed{e_r = r e_1 - r} \quad \textcircled{I}$$

$$r e_1 - r e_1 + e_r - e_r = k e_r - k e_r \Rightarrow r e_r - r e_1 - e_r = k e_r - k e_r$$

$$r e_r - r e_1 = (k + 1) = k e_r - k e_r$$

$$\boxed{r e_r - r e_1 = \omega e_r - k e_r + 1} \quad \textcircled{II}$$

$$e_r - e_r + r e_r - k e_r = r \Rightarrow \boxed{r e_r - e_r - k e_r = r} \quad \textcircled{III}$$

$$k e_r - \omega e_r + 1_0 = r_0 \Rightarrow \boxed{k e_r - \omega e_r = 1_0} \quad \textcircled{IV}$$

$$r(re_1 - r) - re_1 = \omega e_k - re_k + 1$$

$$re_1 = \omega e_k - re_k + 1$$

$$re_k - (re_1 - r) = r + re_k$$

$$re_k - \omega e_k = 1. \Rightarrow e_k = \frac{1 + \omega e_k}{r}$$

$$re_k - (re_1 - r) = r + r \times \frac{1 + \omega e_k}{r}$$

$$re_1 = \cancel{\omega e_k} - 1 - \cancel{\omega e_k} + 1 \Rightarrow e_1 = -\frac{r}{r}$$

$$re_k - \left(-\frac{r}{r} - r\right) = \cancel{r + \omega} + r\omega e_k$$

$$r\omega e_k = r\omega \Rightarrow e_k = 1$$

$$e_k = \frac{1 + r\omega}{r} = \frac{\omega\omega}{r} = 1 + r\omega$$

$$i_n = \frac{e_k - e_k}{1} = 1 - 1 + r\omega = -r\omega A$$